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Six Uses of the Internet to Develop Students' Gifts and Talents

The explosion of the World Wide Web in the mid-1990s marked the beginning of a new era. The World Wide Web creates an environment in which the collection, analysis, and sharing of information are paramount. Today, students construct knowledge by gathering information, organizing it in meaningful ways, and presenting it to others. In this way, students are actively involved with the technology and use it as a tool to answer questions and solve problems. The Internet is the single most significant technology available to gifted and talented students. While one might expect that children who use the Internet are isolated and less social, research refutes this myth. Children who use the Internet spend 37% less time watching television and 16% more time with friends and family (Burkhardt et al., 2003).

Based on the four cornerstones of differentiation (process, product, content, and learning environment), modifications to meet gifted and talented students' educational needs can easily be made with the Internet. A higher level of sophistication and a wider variety of processes are available to gifted and talented students to gather and analyze information through the Internet. The Internet enhances gifted students' ability to create professional-looking products, and it removes many of the barriers associated with finding authentic audiences for those products. Naturally, the Internet expands the depth and breadth of available content for gifted and talented students. Finally, the entire learning environment changes with the Internet. While its function as a world library is paramount, the Internet also offers a myriad of other learning and productivity options, including six different types of learning activities for gifted and talented students: information resources, e-books, interactive projects, online classes, publishing platforms, and mentoring resources.

Information Resources

The Internet is the most extensive and accessible collection of information available to students. Since gifted and talented students require greater depth and breadth of information than other students, the Internet is an important resource for them. Many gifted students are passionate about esoteric topics, and they require advanced information that cannot be found in most school and local libraries. The Internet meets their quest for content related to their passion areas above and beyond what is available in textbooks and local libraries.

Conducting research on the Internet requires four skills: being a critical consumer, surfing efficiently, judging the necessity of information, and using information ethically.

Being a Critical Consumer

While the Internet is an extensive storehouse of information, the validity of its content is a constant area of concern. From an early age, students must be trained to develop a healthy skepticism about the validity of information they find in the Internet

world of information without restraint.

One possible strategy is to teach students the methodologies employed by historical researchers when evaluating documents, which involves external and internal criticism (Fraenkel & Wallen, 2003). In historical research, *external criticism* refers to the genuineness of a document. As it applies to Internet content, external criticism refers to the source of the information. Student should ask themselves, "Is the information attributable to a legitimate source?" Once external criticism is satisfied, students should evaluate internal criticism. *Internal criticism* addresses whether the content is accurate.

Thus, internal and external criticisms consider the source of the information, as well as the content. Students should contemplate the following questions when reviewing Web content:

- *Who* created the content? What clues exist to infer who created the information?
- *What* is the content? Is the information free of spelling and grammar mistakes? What stance does the creator of the information take, and how does this stance shape the information presented? Is the information useful?
- *When* was the content created? Was the information presented on the Web site available when the document was created? Is the content current? When was the Web site last updated?
- *Where* was the content created? Where does the Web site reside? Do other resources support this information?
- *Why* was the content created? Does the Web site have anything to gain by presenting this information? Are there other possible viewpoints or explanations that the Web site has neglected to address?

McCoach (2002) suggested that students evaluate Web sites according to three criteria: reliability, authorship, and purpose. In addition to the preceding criteria, she proposed that students also consider some of the following when evaluating Web content:

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- Has the Web content been through any sort of review process?
- Does the site provide citations or references for print material that supports the information contained on the site?
- Does the site provide links to other reputable Web sites? Is the site listed within other reputable Web sites?
- Does the site provide contact information?
- Are the author's credentials provided on the site?
- Is the content on a personal Web page, or is it on one that is associated with a reputable organization?

Surfing Efficiently

Students can learn to surf the Internet efficiently. Technologically literate students use search engines to locate information, which involves selecting keywords for topic searches, as well as evaluating which links seem most promising from within documents. Gifted and talented students should be taught simple Boolean logic at an earlier age. Very young gifted children can be taught the difference between searching "cats AND dogs" verses "cats OR dogs." Venn diagrams can be used to introduce the concept.

Learning to select the best combination of search words is essential. Initially, students require guidance in selecting search terms and combining them for effective search results. But, with practice, they gain expertise at selecting the most fruitful combination of search terms. Web scavenger hunts are an effective and enjoyable activity for improving student search skills. Students can use search engines individually or in small groups for the activity. For example, several groups

may compete to be the first to locate a graphic image of the California state capitol or the height of the tallest mountain in the state of Washington. The teacher can select a variety of types of information for research questions. Following each search, students should discuss the various combinations they used to locate the desired information.

Judging the Necessity of Information

A third critical research issue is judging the necessity of information. Students should know when and what additional information is needed, as well as when and what information is not necessary. Information overload can be as crippling as information paucity. During a 1983 *60 Minutes* interview, Grace Hopper, the first person to develop a computer programming language, warned of an information overload. She cautioned that essential information can be blocked by a myriad of nonessential information.

The classic language arts' exercise of selecting the topic sentence for a paragraph can be extended to help students judge the usefulness of information. Students can discuss what information would be appropriate to include with a given topic sentence and what information would not. Student can also discuss the potential productivity of links on sample Web pages.

Using Information Ethically

Finally, parents and educators should discuss the ethical use of information found on the Internet. This includes discussing plagiarism: what constitutes an acceptable paraphrase, the importance of accurately paraphrasing information, the necessity of putting directly copied information in quotation marks, and the importance of citing paraphrased and directly quoted information. Students often believe they only need to reference direct quotations. They are unaware that any information used, whether paraphrased or directly quoted, should be referenced.

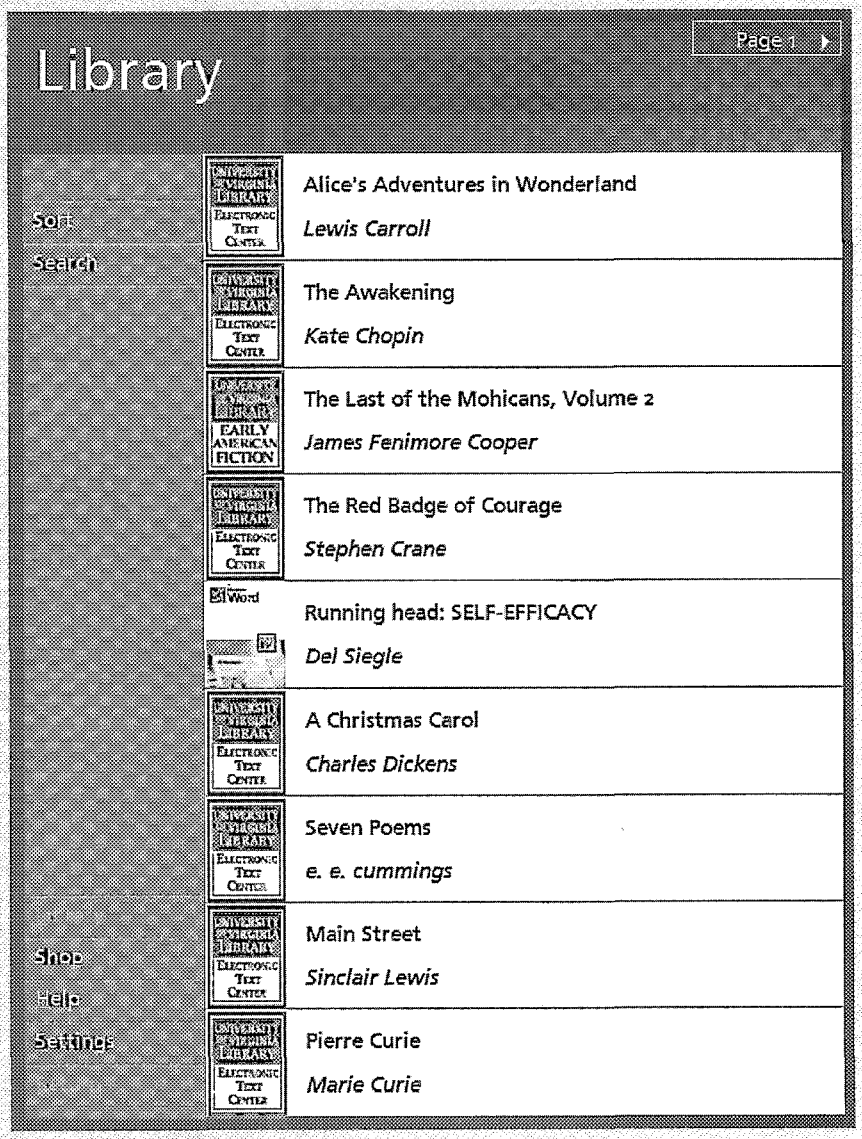

Figure 1
Student's personal library of downloaded ebooks

The Indiana University Writing Tutorial Services (n.d.) has an excellent Web page dedicated to plagiarism and suggests the following strategies to avoid it:

1. Put in quotations everything that comes directly from the text especially when taking notes.
2. Paraphrase, but be sure

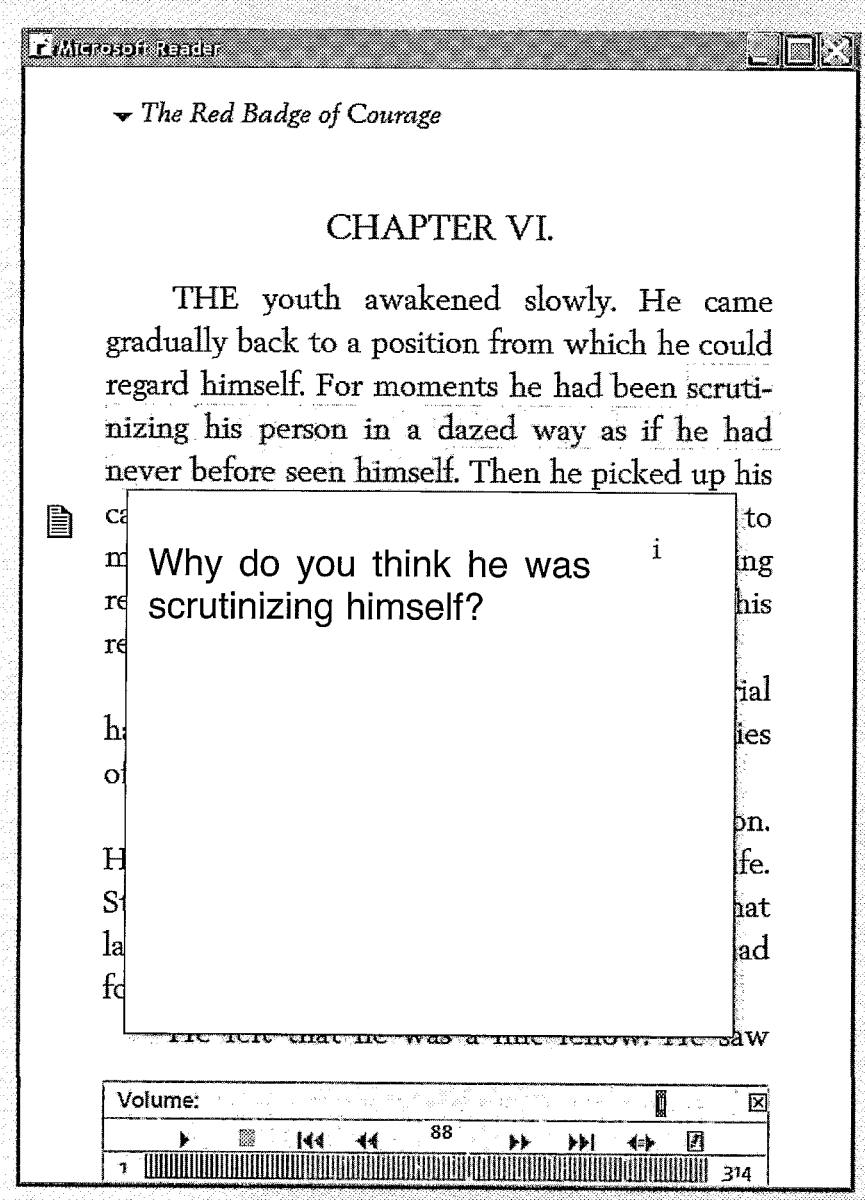

Figure 2
Sample page with highlighting and attached note

you are not just rearranging or replacing a few words. Instead, read over what you want to paraphrase carefully; cover up the text with your hand, or close the text so you can't see any of it (so aren't tempted to use the text as a "guide"). Write out the idea in your own words without peeking.

3. Check your paraphrase against the original text to be sure you have not accidentally used the same phrases or words and that the information is accurate.

Citations are not limited to text. Students regularly use graphic images from the Internet. The source of these graphic images should be cited just as text sources are referenced.

Educators who are concerned about plagiarism can subscribe to a plagiarism screening service. Students submit their papers online through a service such as Turn It In (http://www.turnitin.com). In addition to identifying plagiarized material, many of these services also offer options for recording student grades, storing student writing portfolios, and peer editing. With about one in three 12- to 17-year-olds reporting that they have cheated (Sussman, 2004) and with term papers available for sale on the Internet (e.g., http://www.schoolsucks.com), plagiarism screening services are becoming more popular.

E-Books

Books that are in the public domain are often available free in an electronic format. One source for these books is the University of Virginia Electronic Text Center (http://etext.lib.virginia.edu/ebooks), which has an extensive holding including classics by well-known authors and even some picture books. These electronic books can be read online with a standard Web browser or downloaded for viewing on personal computers or handheld devises such as the Palm Pilot. In addition to books in the public domain, many online bookstores offer electronic versions of popular titles, the price for which is similar to that of a book in print.

A free Microsoft Reader 2.21 can be downloaded from their Web site (http://www.microsoft.com/reader/downloads/ppc.asp). The program contains several sophisticated features.

Students choose books from a personally created library (see Figure 1). A synthesized voice can read the text to the students. Teachers and students can electronically highlight text and paste notes on the electronic pages (see Figure 2). Type sizes can be enlarged for students with vision problems.

While still in their infancy, electronic books are gaining popularity. Educators and parents who are having trouble satiating voracious young readers will find the numerous classic titles in the public domain a particularly valuable resource.

Interactive Projects

The Internet creates a global community of learners. Students from around the world can share their experiences. For example, American Indian students in Montana jointly created multimedia presentations on native cultures with Alaskan Eskimo students. In Idaho, Japanese-language students have e-mail pen pals in Japan. The Idaho students send e-mails in Japanese to their Japanese partners, who then reply in English, allowing both sets of students to enjoy sending e-mails in their second language.

Interactive Internet projects often involve collecting and sharing data. Students of teachers in The Globe Program (http://www.globe.gov/fsl/welcome.html) collect environmental data from their community and report it through the Internet, create maps and graphs from the interactive global data set to which they contribute, and collaborate with scientists and students from around the world. Looksmart (http://search.looksmart.com/p/browse/us1/us317837/us317922/us10076430/us10076799) and Prince William County Schools (http://www.pwcs.edu/i-tech/internetprojects.htm) have extensive lists of interactive online learning projects for students around the world.

Interactive projects can also occur beyond the classroom. For example, round-robin writing can be used to teach common story elements (introduction, rising action, crisis, resolution, and epilogue). Students are organized into groups of five, and each member of the group begins a story by writing an introduction (characters and setting). Each student then e-mails his or her introductions to another student (Student A e-mails to Student B, Student B e-mails to Student C . . . Student E e-mails to Student A) who adds rising action. Once that section is complete, the students e-mail their stories to the same partner (e.g., Student A again e-mails to Student B), and the steps are repeated until the stories are completed. The final contributor to each story e-mails it to the originator. Five different stories originate from each group of five students, each student has contributed to each story, and each student has written each of the five elements.

Online interactions do not necessarily need to occur with other humans. The Internet is filled with computer-generated educational games and adventures. Some sites feature educational games (http:// www.funschool.com), while others feature educational adventures (http://www.josietrue.com). Teachers should carefully screen sites prior to recommending them to students. Reputable student sites monitor student e-mail and chat to safeguard users and ensure appropriate interactions.

Online Classes

Local schools cannot always provide gifted and talented students with the courses they need. For example, some schools may not offer a course in an area where a gifted student shows an interest or demonstrates expertise, many small or rural schools cannot provide the instructional expertise or specialized curriculum necessary to satiate certain interests and academic needs, or the classes at a larger school may not fit into gifted students' schedules. And, in some cases, gifted students may wish to enroll in more than the traditional six or seven courses allowed each semester.

Online classes are a possible solution for each of these situations (Siegle, 2004). An excellent list of virtual K–12 schools that offer online classes is available at http://www.dlrn.org/virtual.html. Many universities also offer online courses that would be appropriate for gifted and talented students.

Prior to enrolling in an online course, the following questions should be addressed:

- What are the dropout and completion rates for the course?
- How transferable are the course credits?
- Does the course instructor hold certification or a degree in the course topic?
- Is the pace of the course negotiable?
- How much interaction is built into the course?
- Is the course self-contained or are additional materials needed?
- Are any special hardware, software, or technology skills needed for the course? (Siegle, 2005, p. 45)

While the Internet shows great promise for gifted and talented students who wish to have their academic needs met online, online courses are not appropriate for everyone. Students who are successful online are actively engaged, curious, focused, flexible, and highly motivated. Educators and parents cannot assume that all gifted and talented students have the necessary technological, time-management, and study skills necessary to be successful online.

Publishing Platform

The Internet has created a democratization of data. Overwhelmingly, information is being stored in an electronic format that is available to all.

> A century ago the average person could only create and access a small amount of information. Now, ordinary people not only have access to huge amounts of data, but are also able to create gigabytes of data themselves and, potentially, publish it to the world via the Internet, if they choose to do so. (Lyman, Varian, Dunn, Strygin, & Swearingen, 2000, p. 3)

The Internet provides a venue for gifted and talented students to share their creative accomplishments. For example, International Kids' Space (http://www.kids-space.org) displays original student artwork and writing. An alternative to submitting work to other sites is to create online literature magazines for a class or school. A Web magazine can be stored on a school's server, on rented server space (e.g., http://www.namesecure.com), or on a site that offers free Web space (e.g., http://geocities.yahoo.com). Always obtain written permission from parents and students before publishing students' work. Never post students' last names with their projects or any identifying student information, such as home addresses or phone numbers (Payton, 1999). The contact person for projects should be the instructor, not a student.

Students can also create Web sites related to their interest areas. Outstanding student-created sites can be submitted to the international ThinkQuest competition (http://www.thinkquest.org), in which teams of students and teachers build Web sites on educational topics. These Web sites are published in the ThinkQuest Library, and top-scoring teams win valuable prizes.

Mentoring Resources

The nature and diversity of gifted students' interests demand resources beyond the confines of the school and sometimes beyond the confines of the community. These demands demonstrate the need for mentors and other resource people. Mentors provide content sophistication that normally would not be accessible from traditional resources (Siegle, 2001). The mentoring process has developed through the centuries, and telementoring, also known as virtual mentoring, e-mentoring (Nash, 2001), or iMentoring (Buery, n.d.), is a natural extension. Students involved in telementoring often develop class projects using e-mail or the World Wide Web. These include a three-component design involving a student, his or her teacher, and a mentor. For example, a student, with assistance from his or her teacher, will propose a mentoring project. They will propose the project to an organization such as the International Telementor Program (http://www.telementor. org), which will assist in locating a mentor.

Telementoring is popular because it allows mentors to use their time effectively and efficiently. Communication usually occurs through e-mail or online discussion forums to ensure privacy and security. These communications are frequently monitored to safeguard the mentee and limit liability to the mentor and the sponsoring organization. Telementoring

- connects thousands of professionals with students on a scale that is impractical in traditional face-to-face mentoring;
- matches students with appropriate mentors without geographic limitations;
- allows convenient, consistent, weekly communication between students and mentors without travel;
- creates an archive of all communication for monitoring and evaluation purposes;
- eliminates scheduling problems between mentors and students because an e-mail communication can be sent any time from a variety of locations; and
- provides the opportunity for students to work on long-term projects with their mentors. (ITP, n.d.)

Telementoring becomes even more important for students from rural and low-income communities who have esoteric interests. Educators and parents in these areas may

Gifted Child Today

Call for Papers
Spring 2006 Special Issue
Standards

This special issue examines the pros and cons of content and performance standards from the perspectives of teachers, gifted students and parents. As accountability and government funding become attached to adequate yearly progress indicators (ala NCLB), standardization of gifted education seems imminent; and, as a field we must begin thinking about and exploring possible repercussions on gifted learners.

For this issue, we are not looking for lesson plans developed for gifted learners based on content standards. Rather, share your experiences working as a teacher (or a learner!) in the era of accountability and standardization. Tell your story and how standards affect your educational experiences.

Possible focus questions include: What is the history of standards and their perceived need in gifted education? How do standards effect gifted students and/or teachers? Can/Should gifted education be standardized? When standards are used are we striving for excellence or training for expertise? Are standards nothing more than minimum performance goals and outcomes? How have standards changed your way of teaching gifted learners? How do standards help parents and the general public know learning is occurring in classrooms for the gifted? How do you balance differentiates instruction and grade-level content standards? As a gifted student, how do standards affect your learning? What (or Who) determines adequate performance standards for gifted learners?

Have another idea?

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Manuscripts needed for review by July 1, 2005

find it difficult to locate a nearby mentor for a student with an atypical interest.

Telementoring need not be limited to participation with a national program. Classroom teachers or gifted and talented coordinators can match their students with adults through e-mail pen pals in their community. Initially, it is more convenient to locate community people who are willing to serve as electronic resources; however, the participant pool can expand to include contacts around the country or even the world.

Conclusion

Ten years ago, most educators had not heard of the Internet. Today, it is a central part of the education environment. As data transfer speeds improve, the Internet's ubiquitous role in education will only increase. Educators who are not harnessing this educational tool are missing a valuable resource for developing young people's gifts and talents. GCT

References

Buery, R. (n.d.). *Building electronic bridges to connect mentors and young people.* Retrieved January 13, 2005, from http://www.uwnyc.org/technews/v3_n6_a2.html

Burkhardt, G., Monsour, M., Valdez, G., Gunn, C., Dawson, M., Lemke, C., et al. (2003). *21st century skills: Literacy in the digital age.* Retrieved January 13, 2005, from http://www.ncrel.org/engauge/skills/skills.htm

Fraenkel, J. R., & Wallen, N. E. (2003). *How to design and evaluate research in education* (5th ed.) New York: McGraw-Hill.

Indiana University Writing Tutorial Services. (n.d.). *Plagiarism: What it is and how to recognize and avoid it.* Retrieved January 13, 2005, from http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml

International Telementoring Program (ITP). (n.d.). Retrieved January 13, 2005, from http://www.telementor.org

Lyman, P., Varian, H. R., Dunn, J., Strygin, A., & Swearingen, K. (2002). *How much information?* Retrieved January 13, 2005, from http://www.sims.berkeley.edu/research/projects/how-much-info/summary.html

McCoach, D. B. (2002). Using the web for social studies enrichment. *Gifted Child Today, 25*(3), 48–52.

Nash, D. (2001, December). Enter the mentor. *Parenting for High Potential,* 18–21.

Payton, T. (1999). *Empowering student learning with web publishing.* Retrieved January 13, 2005, from http://www.siec.k12.in.us/~west/article/publish.htm

Siegle, D. (2001, December). "One size fits all" doesn't work when selecting a mentor. *Parenting for High Potential,* 7, 11.

Siegle, D. (2004). Learning online: A viable alternative for gifted and talented students. *Duke Gifted Letter, 4*(4), 7.

Siegle, D. (2005). *Using media & technology with gifted learners.* Waco, TX: Prufrock Press.

Sussman, D., (2004). *Academic integrity? ABCNews Primetime Poll: Cheating among teens common, effective.* Retrieved January 13, 2005, from http://abcnews.go.com/sections/primetime/US/cheating_poll_040429.html

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